

REMARKS:

In the foregoing amendments, claim 1 was amended by changing the lower limit of carbon ("C") from "0.02" to -- 0.10 --, which lower limit can be found in example No. 16 of Table 1 on page 14 of the present specification disclosure. The foregoing amendments also rewrite claims 2 and 4 as independent claims including all the limitations of amended claim 1 with the amended carbon content of C: 0.10-0.50 % by weight. Claims 1-8 remain in the application for consideration by the examiner. Applicant respectfully requests reconsideration and allowance of these claims for least the following reasons.

The Official action objected to claims 2 and 4 under 37 C.F.R. §1.75(c) as being of improper dependent form for failing to further limit the subject matter of the previous claim. The Official action stated that the language "consisting of" in claim 1 does not allow the alloy to have additional elements as allegedly required in claims 2 and 4. While applicant does not agree with this position, in the foregoing amendments, claims 2 and 4 were rewritten as independent claims. Accordingly, applicant respectfully requests that the examiner reconsider and withdraw the objection to claims 2 and 4.

Claims 1-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,459,160 of Meetham *et al.* (Meetham). Applicant respectfully submits that the inventions defined in claims 1-8 are patently distinguishable from the teachings of Meetham within the meaning of 35 U.S.C. §102(b) or 35 U.S.C. §103(a) for at least the following reasons.

The teachings of Meetham are directed to "single crystal castings" as the title shows, while the presently claimed invention is concerned with a nickel-base heat resistant cast alloy and a turbine wheel for automotive engines made therefrom, which contains multiple crystals. Because

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no crystal boundary resides in the single crystal casting, as proposed by Meetham, the single crystal casting proposed therein contains a very small amount of carbon, if any. In other words, for the purposes of preventing formation of crystal boundaries, the carbon content in the alloy for single crystal castings, such as required in Meetham, is strictly limited. Those skilled in the art understand this from the teachings of Meetham, including carbon ranges and the actual carbon contents in the alloys (examples) of Meetham. As explained by Meetham in the paragraph bridging columns 2 and 3, the carbon contents in alloy (example) 1 is identical to the control alloy, and therefore any difference in properties is due to the structural difference between a single-crystal casting (alloy 1) and a directionally solidified casting (control). The teachings of Meetham further explain that alloy (example) 6 falls outside the invention proposed therein by virtue of the high carbon level for alloy 6 (0.15% C). See, for example, column 3, lines 25-37 of Meetham. On the other hand, the remaining alloys (examples) of Meetham contain 0.015% C.

In contrast to the teachings of Meetham, the amounts of carbon in the presently claimed invention provide carbides at the crystal boundaries, which is useful for strengthening the boundaries. Thus, in the presently claimed invention, a suitable amount of carbon is added intentionally to the alloy for turbine wheels. Since the teachings of Meetham and applicant's claims require mutually exclusive amounts of carbon, applicant respectfully submit that it is impossible for the teachings of Meetham to contemplate or suggest the nickel-based heat resistant cast alloy defined in any of present claims 1-4.

With respect to present claims 5-8 that define a turbine wheel for automobile engines made of the nickel-base heat resistant cast alloy respectively according to claims 1-4, the Official action alleged that it would have been obvious to use the single crystal casting, such as proposed by

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Meetham, in a turbine wheel for automobile engines. However, due to the structural differences between the single crystal casting proposed by Meetham and the nickel-base heat resistant cast alloy defined in present claims 1-4, as well as the different technologies associated therewith, applicant respectfully submits that there would be no reason for one of ordinary skill in the art to use the single crystal casting proposed by Meetham in a turbine wheel for automobile engines, as presently claimed. At least for this reason, applicant respectfully submits that present claims 5-8 are patently distinguishable from the teachings of Meetham.

At least for the foregoing reasons, applicant respectfully submits that the inventions defined in present claims 1-8 are patently distinguishable from the teachings of Meetham within the meaning of 35 U.S.C. §102 and/or 35 U.S.C. §103. Therefore, applicant respectfully requests that the examiner reconsider and withdraw any rejection of the present claims over these teachings as set forth in the outstanding Office action.

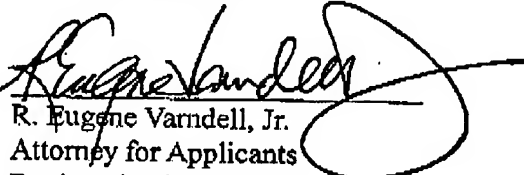
Based on the above, a formal allowance of claims 1-8 is respectfully requested. While it is believed that all the claims in this application are in condition for allowance, should the examiner have any comments or questions, it is respectfully requested that the undersigned be telephoned at the below listed number to resolve any outstanding issues.

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In the event this paper is not timely filed, applicant hereby petitions for an appropriate extension of time. The fee therefor, as well as any other fees which become due, may be charged to our deposit account No. 50-1147.

Respectfully submitted,  
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